

REMARKS

This is a full and timely response to the outstanding non-final Office Action mailed May 27, 2003. Claims 51-67 have been newly added. Support for newly amended claims 4, 20, 27, 28, and added claims 51-67 can be found in the specification, for example, on page 15, lines 3 - 15 and page 12, lines 9 - 16. Claims 31-50 have been withdrawn from further consideration by the Examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. Upon entry of this response, claims 1-30 and 51-67 remain pending in the present application.

In the Office Action, pending claims 1-30 have been preliminarily rejected for obviousness under 35 U.S.C. § 103(a). The abstract stands objected to for improper language. The Applicants traverse all of the rejections of the Office Action. Reconsideration and allowance of the subject application and presently pending claims 1-30 and 51-67 is respectfully requested.

I. Response to Election/Restrictions

Applicants confirm the election without traverse to prosecute the invention of Group 1, claims 1-30. Furthermore, through the foregoing Amendment, Applicants have withdrawn claims 31-50, without prejudice, thereby evidencing Applicants' intent to preserve Applicants' right to pursue the subject matter of the cancelled claims in the future.

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

II. Response to Specification Objection

The abstract has been amended to be clearer and more concise. The Applicants request favorable reconsideration and withdrawal of the objection to the abstract.

III. Response To Claim Rejections Based On Obviousness

In the Office Action, claims 1-15, 17, 19, and 20-30 have been preliminarily rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,922,386 to Ros, (hereinafter "Ros") in view of U.S. Patent No. 6,069,346 to Hyllberg (hereinafter "Hyllberg 346"); and claims 16 and 18 have been preliminarily rejected under 35 U.S.C. §103(a) as being unpatentable over Ros, in view of U.S. Patent No. 5,616,263 to Hyllberg (hereinafter "Hyllberg 263"). It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a combination of references, the cited combination of references must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. See, e.g., In re Dow Chemical, 5 U.S.P.Q. 2d 1529, 1531 (Fed. Cir. 1988), and In re Keller, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981).

The Applicants respectfully submit that it is not the Applicants' burden to prove that no teaching, suggestion, or motivation exists within the prior art that would lead one of ordinary skill to make the particular combination of elements, as claimed. Instead, the initial burden is upon the Patent Office to

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

establish a *prima facie* case of obviousness. Such a *prima facie* showing includes an identification of a proper suggestion or motivation within the prior art to make the combination. Nevertheless, the Applicants have closely reviewed the references applied by the Office Action and have been unable to identify any suggestion, motivation, or other teaching contained within these references or elsewhere in the prior art that would lead one of ordinary skill in the art (without the benefit of hindsight) to make the combination (both structure and function) as set forth in the claims of the present application. Specifically, Ros discloses, teaches, and suggests a small printed circuit for generating heat and a process of making the same. Alternatively, Hyllberg '346 discloses, teaches, and suggests a thermal conductive roller.

Therefore, if the Examiner intends to maintain the obviousness rejections, based upon a combination of prior art references, the Applicants respectfully request that the Examiner identify the specific teachings within the prior art that would suggest the desirability or motivation for the particular combination of elements as claimed.

A. Claim 1

Independent claim 1 reads:

A resistive heater comprising a resistive layer coupled to a power source, said resistive layer comprising a metallic component and one or more oxide, nitride, carbide, and/or boride derivatives of said metallic component, wherein *said resistive layer has a resistivity of 0.0001 to 1.0 Ω cm*, and wherein application of current from said

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

power supply to said resistive layer results in production of heat by said resistive layer.

(Emphasis Added)

The Applicants respectfully submit that Ros in view of Hyllberg '346 fails to disclose, teach, or suggest at least the above-emphasized element of claim 1. The Examiner acknowledges on page 4 of the Office Action that Ros does not disclose a resistivity for the resistive heat layer. The Examiner cites to Hyllberg '346 (Col. 4, lines 44-45) to cure the deficiency. However, Hyllberg '346 discloses a resistivity range of $10^3 \Omega \text{ cm}$ to $10^{-6} \Omega \text{ cm}$ for the shield layer (Element 17). Hyllberg '346 does not disclose a resistivity for the heating layer (Element 14). Therefore, if one skilled in the art were motivated to combine the teachings, which Applicants do not concede, the resulting structure would be the heating layer of Ros with a shield layer having a resistivity of $10^3 \Omega \text{ cm}$ to $10^{-6} \Omega \text{ cm}$ for the shield layer. Applicants claim a resistive layer having a resistivity of 0.0001 to 1.0 $\Omega \text{ cm}$, which is not disclosed, taught, or suggested by either Ros or Hyllberg '346 either individually or in combination.

As a result of at least the above mentioned, the Applicants respectfully submit that claim 1 is allowable and allowance is respectfully requested.

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

B. Claims 2, 3, and 7 - 19

The Applicants respectfully submit that since claims 2, 3, and 7 - 19 depend on independent claim 1, claims 2, 3, and 7 - 19 contain all limitations of independent claim 1. Since independent claim 1 should be allowed, as argued above, pending dependent claims 2, 3, and 7 - 19 should be allowed as a matter of law for at least this reason. In re Fine, 5 U.S.P.Q. 2d 1596, 1608 (Fed. Cir. 1988).

1. Claim 2

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach, or suggest the element of the oxide, nitride, carbide, and/or boride derivative being present in the resistive layer in an amount resulting in a resistivity of the resistive layer of 0.0001 to 1.0 Ω cm.

Therefore, the Applicants respectfully submit that claim 2 should be allowed.

2. Claim 8

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach, or suggest an insulating layer comprising aluminum oxide or silicon dioxide between the substrate and the resistive layer.

Therefore, the Applicants respectfully submit that claim 8 should be allowed.

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

3. Claim 9

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach, or suggest an adhesion layer between said insulating layer and said substrate.

Therefore, the Applicants respectfully submit that claim 9 should be allowed.

4. Claim 10

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach, or suggest an adhesion layer comprising nickel-chrome alloy or nickel-chrome-aluminum-yttrium alloy.

Therefore, the Applicants respectfully submit that claim 10 should be allowed.

5. Claim 11

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach, or suggest a heat reflective layer between said resistive layer and said substrate.

Therefore, the Applicants respectfully submit that claim 11 should be allowed.

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

6. Claim 12

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach, or suggest a heat reflective layer comprising zirconium oxide.

Therefore, the Applicants respectfully submit that claim 12 should be allowed.

7. Claim 15

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach, or suggest a ceramic layer superficial to said resistive layer comprising aluminum oxide and sealed with nanophase aluminum oxide.

Therefore, the Applicants respectfully submit that claim 15 should be allowed.

8. Claim 16

The Applicants respectfully submit that Ros in view of Hyllberg '263 and Ros in view of Hyllberg '346 fail to disclose, teach, or suggest at least that the said resistive layer has a resistivity of 0.0001 to 1.0 Ω cm of claim 1 from which claim 16 depends. The Examiner acknowledges on page 4 of the Office Action that Ros does not disclose a resistivity for the resistive heat layer. The Examiner cites to Hyllberg '263 and Hyllberg '346 to cure the deficiency. However, neither Hyllberg '263 nor Hyllberg '346 discloses a resistivity range of $10^3 \Omega$ cm to $10^{-6} \Omega$ cm for the shield layer. Hyllberg '346 and Hyllberg '263 do not disclose a resistivity for the heating layer. Therefore, if one skilled in

the art were motivated to combine the teachings, which Applicants do not concede, the resulting structure would be the heating layer of Ros with a shield layer having a resistivity of $10^3 \Omega \text{ cm}$ to $10^{-6} \Omega \text{ cm}$ for the shield layer. Applicants claim a resistive layer having a resistivity of 0.0001 to $1.0 \Omega \text{ cm}$ which is not disclosed, taught, or suggested by either Ros, Hyllberg '346, Hyllberg '263 either individually or combined.

Therefore, the Applicants respectfully submit that claim 16 should be allowed.

9. Claim 17

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach, or suggest a metallic layer comprising molybdenum or tungsten superficial to said resistive layer.

Therefore, the Applicants respectfully submit that claim 17 should be allowed.

10. Claim 18

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach or suggest the substrate being an injection mold, a roller, or a platen for semiconductor wafer processing.

The Examiner contends it would have been obvious for the substrate to be an injection mold, a roller, or a platen for semiconductor wafer processing based on Ros, in view of Hyllberg '263". Applicants respectfully disagree.

Neither Ros nor Hyllberg '263 disclose, teach, or suggest the substrate being an injection mold, a roller, or a platen for semiconductor wafer processing. Semiconductor wafer processing requires precision equipment. Neither Ros nor Hyllberg '263 suggest a substrate designed for the precision required in semiconductor wafer processing.

Therefore, the Applicants respectfully submit that claim 18 should be allowed.

C. Claim 4

Independent claim 4 reads:

4. A resistive heater on a substrate, produced by the method comprising the steps of:

- a) providing a substrate, a metallic component feedstock, and a gas comprising one or more of oxygen, nitrogen, carbon, and boron;
- b) melting said feedstock to produce a stream of molten droplets;
- c) *reacting said molten droplets with said gas* to produce one or more oxide, nitride, carbide, or boride derivatives of said metallic component, wherein a portion of said metallic component reacts with said gas to produce said oxide, nitride, carbide, and/or boride derivative of said metallic component and a portion of said metallic component remains unreacted;
- d) depositing said unreacted metallic component and said oxide, nitride, carbide, and/or boride derivatives of said metallic component onto said substrate to produce a resistive layer *with individual platelet-like particles having reaction products surrounding free metal providing a path for electrons*; and
- e) connecting said resistive layer of step (d) to a power supply to produce a resistive heater.

(Emphasis Added)

The Applicants respectfully submit that Ros in view of Hyllberg '346 fails to disclose, teach, or suggest at least the above-emphasized elements of claim 4. Ros discloses a ceramic coating having pinholes throughout the

HAYES SOLOWAY P.C.

130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

surface. Ros's method fills the pinholes with successive layers of the ceramic coating. Ros does not disclose a resistive layer with individual platelet-like particles having reaction products surrounding free metal providing a path for electrons. The Hyllberg '346 process uses a complex binding method, which results in a different microstructure. Applicants claim a resistive layer formed by a method of reacting said molten droplets with said gas during the application process. Hyllberg '346 process is not comparable to Applicants' method and involves far greater complexity than merely mixing the components together. Neither Ros nor Hyllberg '346 disclose, teach, or suggest the above elements of independent claim 4.

As a result of at least the above mentioned, the Applicants respectfully submit that claim 4 is allowable and allowance is respectfully requested.

D. Claims 5 and 6

The Applicants respectfully submit that since claims 5 and 6 depend on independent claim 4, claims 5 and 6 contain all limitations of independent claim 4. Since independent claim 4 should be allowed, as argued above, pending dependent claims 5 and 6 should be allowed as a matter of law for at least this reason. In re Fine, 5 U.S.P.Q. 2d 1596, 1608 (Fed. Cir. 1988).

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

1. Claim 6

In addition to the above mentioned, the Applicants respectfully submit that Ros in view of Hyllberg '346 fails to disclose, teach, or suggest at least the resistive layer having a resistivity of 0.0001 to 1.0 Ω cm in claim 6. The Examiner acknowledges on page 4 of the Office Action that Ros does not disclose a resistivity for the resistive heat layer. The Examiner cites to Hyllberg '346 (Col. 4, lines 44-45) to cure the deficiency. However, Hyllberg '346 discloses a resistivity range of $10^3 \Omega$ cm to $10^{-6} \Omega$ cm for the shield layer (Element 17). Hyllberg does not disclose a resistivity for the heating layer (Element 14). Therefore, if one skilled in the art were motivated to combine the teachings, which Applicants do not concede, the resulting structure would be the heating layer of Ros with a shield layer having a resistivity of $10^3 \Omega$ cm to $10^{-6} \Omega$ cm for the shield layer. Applicants claims a resistive layer having a resistivity of 0.0001 to 1.0 Ω cm which is not disclosed, taught, or suggested by either Ros or Hyllberg '346 either individually or combined.

Therefore, the Applicants respectfully submit that claim 6 should be allowed.

E. Claim 20

Independent claim 20 reads:

A method of fabricating a resistive heater on a substrate, said method comprising the steps of:

a) providing a substrate, a metallic component feedstock, and a gas comprising one or more of oxygen, nitrogen, carbon, and boron;

- b) melting said feedstock to produce a stream of molten droplets;
- c) *reacting said molten droplets with said gas* to produce one or more oxide, nitride, carbide, or boride derivatives of said metallic component, wherein a portion of said metallic component reacts with said gas to produce said oxide, nitride, carbide, and/or boride derivative of said metallic component and a portion of said metallic component remains unreacted; and
- d) depositing said unreacted metallic component and said oxide, nitride, carbide, and/or boride derivative of said metallic component onto said substrate *to produce a resistive layer with individual platelet-like particles having reaction products surrounding free metal providing a path for electrons.*

(Emphasis Added)

The Applicants respectfully submit that Ros in view of Hyllberg '346 fails to disclose, teach, or suggest at least the above-emphasized elements of claim 20. Ros disclose a ceramic coating having pinholes throughout the surface. Ros's method fills the pinholes with successive layers of the ceramic coating. Ros does not disclose a method producing a resistive layer with individual platelet-like particles having reaction products surrounding free metal providing a path for electrons. Hyllberg '346 process uses a complex blinding method, which results in a different microstructure. Applicants claim a resistive layer formed by a method of reacting said molten droplets with said gas during the application process. Hyllberg '346 process is not comparable to Applicants' method and involves far greater complexity than merely mixing the components together. Neither Ros nor Hyllberg '346 disclose, teach, or suggest the above elements of independent claim 20.

As a result of at least the above mentioned, the Applicants respectfully submit that claim 20 is allowable and allowance is respectfully requested.

HAYES SOLOWAY P.C.

130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

F. Claims 21-30

The Applicants respectfully submit that since claims 21-30 depend on independent claim 20, claims 21-30 contain all limitations of independent claim 20. Since independent claim 20 should be allowed, as argued above, pending dependent claims 21-30 should be allowed as a matter of law for at least this reason. In re Fine, 5 U.S.P.Q. 2d 1596, 1608 (Fed. Cir. 1988).

1. Claim 21

In addition to the above mentioned, the Applicants respectfully submit that Ros in view of Hyllberg '346 fails to disclose, teach, or suggest at least the resistive layer having a resistivity of 0.0001 to $1.0 \Omega \text{ cm}$ in claim 21. The Examiner acknowledges on page 4 of the Office Action that Ros does not disclose a resistivity for the resistive heat layer. The Examiner cites to Hyllberg '346 (Col. 4, lines 44-45) to cure the deficiency. However, Hyllberg '346 discloses a resistivity range of $10^3 \Omega \text{ cm}$ to $10^{-6} \Omega \text{ cm}$ for the shield layer (Element 17). Hyllberg '346 does not disclose a resistivity for the heating layer (Element 14). Therefore, if one skilled in the art were motivated to combine the teachings, which Applicants do not concede, the resulting structure would be the heating layer of Ros with a shield layer having a resistivity of $10^3 \Omega \text{ cm}$ to $10^{-6} \Omega \text{ cm}$ for the shield layer. Applicants claim a resistive layer having a resistivity of 0.0001 to $1.0 \Omega \text{ cm}$ which is not disclosed,

taught, or suggested by either Ros or Hyllberg '346 either individually or combined.

Therefore, the Applicants respectfully submit that claim 21 should be allowed.

2. Claim 23

In addition to the above mentioned, the Applicants respectfully submit that Ros in view of Hyllberg '346 fails to disclose, teach, or suggest at least the resistive layer having a resistivity of 0.0001 to $1.0 \Omega \text{ cm}$ in claim 23. The Examiner acknowledges on page 4 of the Office Action that Ros does not disclose a resistivity for the resistive heat layer. The Examiner cites to Hyllberg '346 (Col. 4, lines 44-45) to cure the deficiency. However, Hyllberg '346 discloses a resistivity range of $10^3 \Omega \text{ cm}$ to $10^{-6} \Omega \text{ cm}$ for the shield layer (Element 17). Hyllberg '346 does not disclose a resistivity for the heating layer (Element 14). Therefore, if one skilled in the art were motivated to combine the teachings, which Applicants do not concede, the resulting structure would be the heating layer of Ros with a shield layer having a resistivity of $10^3 \Omega \text{ cm}$ to $10^{-6} \Omega \text{ cm}$ for the shield layer. Applicants claim a resistive layer having a resistivity of 0.0001 to $1.0 \Omega \text{ cm}$ which is not disclosed, taught, or suggested by either Ros or Hyllberg '346 either individually or combined.

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

Therefore, the Applicants respectfully submit that claim 23 should be allowed.

3. Claim 25

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach or suggest an adhesion layer between said insulating layer and said substrate.

Therefore, the Applicants respectfully submit that claim 25 should be allowed.

4. Claim 26

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach or suggest said substrate comprising a heat reflective layer.

Therefore, the Applicants respectfully submit that claim 26 should be allowed.

5. Claim 29

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach or suggest the substrate being an injection mold, a roller, or a platen for semiconductor wafer processing.

Therefore, the Applicants respectfully submit that claim 29 should be allowed.

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

IV. Newly Added Claims

Claims 51-67 have been added to better define Applicants' invention.

Applicants believe newly added claims 51-67 are patentable over the cited references.

A. Claim 51

Independent claim 51 reads:

A resistive heater comprising a resistive layer coupled to a power source, said resistive layer comprising a metallic component and *two or more oxide, nitride, carbide, and/or boride derivatives* of said metallic component, wherein *said resistive layer has a resistivity of 0.0001 to 1.0 Ω cm*, and wherein application of current from said power supply to said resistive layer results in production of heat by said resistive layer.

(Emphasis Added)

The Applicants respectfully submit that Ros in view of Hyllberg '346 fails to disclose, teach, or suggest at least the resistive layer having a resistivity of 0.0001 to 1.0 Ω cm of claim 51. The Examiner acknowledges on page 4 of the Office Action that Ros does not disclose a resistivity for the resistive heat layer. The Examiner cites to Hyllberg '346 (Col. 4, lines 44-45) to cure the deficiency. However, Hyllberg '346 discloses a resistivity range of 10³ Ω cm to 10⁻⁶ Ω cm for the shield layer (Element 17). Hyllberg '346 does not disclose a resistivity for the heating layer (Element 14). Therefore, if one

HAYES SOLOWAY P.C.

130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

skilled in the art was motivated to combine the teachings, which Applicants do not concede, the resulting structure would be the heating layer of Ros with a shield layer having a resistivity of $10^3 \Omega \text{ cm}$ to $10^{-6} \Omega \text{ cm}$ for the shield layer. Applicants claim a resistive layer having a resistivity of 0.0001 to $1.0 \Omega \text{ cm}$ which is not disclosed, taught, or suggested by either Ros or Hyllberg '346 either individually or combined.

In addition, the Applicants respectfully submit that Ros in view of Hyllberg '346 fails to disclose, teach, or suggest at least said resistive layer comprising a metallic component and two or more oxide, nitride, carbide, and/or boride derivatives. Ros discloses a heating element consisting of aluminum and aluminum oxide. However, Ros does not disclose a metallic component and two or more oxide, nitride, carbide, and/or boride derivatives. Hyllberg '346 does not cure this deficiency. Applicants claim a metallic component and two or more oxide, nitride, carbide, and/or boride derivatives which is not disclosed, taught, or suggested by either Ros or Hyllberg '346 either individually or combined.

As a result of at least the above mentioned, the Applicants respectfully submit that claim 51 is allowable and allowance is respectfully requested.

B. Claims 52-58

The Applicants respectfully submit that since claims 52-58 depend on independent claim 51, claims 52-58 contain all limitations of independent

HAYES SOLOWAY P.C.

130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

claim 51. Since independent claim 51 should be allowed, as argued above, pending dependent claims 52-58 should be allowed as a matter of law for at least this reason. In re Fine, 5 U.S.P.Q. 2d 1596, 1608 (Fed. Cir. 1988).

1. Claim 54

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach or suggest an adhesion layer between said insulating layer and said substrate.

Therefore, the Applicants respectfully submit that claim 54 should be allowed.

2. Claim 55

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach or suggest a heat reflective layer between said resistive layer and said substrate.

Therefore, the Applicants respectfully submit that claim 55 should be allowed.

3. Claim 57

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach or suggest wherein the substrate is an injection mold, a roller, or a platen for semiconductor wafer processing.

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

The substrate being an injection mold, a roller, or a platen for semiconductor wafer processing is not obvious based on U.S. Patent No. 3,922,386 to Ros, (hereinafter "Ros") in view of U.S. Patent No. 5,616,263 to Hyllberg (hereinafter "Hyllberg '263"). Neither Ros nor Hyllberg '263 disclose, teach, or suggest the substrate being an injection mold, a roller, or a platen for semiconductor wafer processing. Semiconductor wafer processing requires precision equipment. Neither Ros nor Hyllberg '263 suggest a substrate designed for the precision required in semiconductor wafer processing.

Therefore, the Applicants respectfully submit that claim 57 should be allowed.

C. Claim 59

Independent claim 51 reads:

A resistive heater comprising a resistive layer coupled to a power source, said *resistive layer comprising a metallic component and one or more nitride, carbide, and/or boride derivatives* of said metallic component, wherein said *resistive layer has a resistivity of 0.0001 to 1.0 Ω cm*, and wherein application of current from said power supply to said resistive layer results in production of heat by said resistive layer.

(Emphasis Added)

The Applicants respectfully submit that Ros in view of Hyllberg '346 fails to disclose, teach, or suggest at least the resistive layer having a resistivity of 0.0001 to 1.0 Ω cm of claim 59. The Examiner acknowledges on

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

page 4 of the Office Action that Ros does not disclose a resistivity for the resistive heat layer. The Examiner cites to Hyllberg '346 (Col. 4, lines 44-45) to cure the deficiency. However, Hyllberg '346 discloses a resistivity range of $10^3 \Omega \text{ cm}$ to $10^{-6} \Omega \text{ cm}$ for the shield layer (Element 17). Hyllberg '346 does not disclose a resistivity for the heating layer (Element 14). Therefore, if one skilled in the art were motivated to combine the teachings, which Applicants do not concede, the resulting structure would be the heating layer of Ros with a shield layer having a resistivity of $10^3 \Omega \text{ cm}$ to $10^{-6} \Omega \text{ cm}$ for the shield layer. Applicants claims a resistive layer having a resistivity of 0.0001 to 1.0 $\Omega \text{ cm}$ which is not disclosed, taught, or suggested by either Ros or Hyllberg '346 either individually or combined.

In addition, the Applicants respectfully submit that Ros in view of Hyllberg '346 fails to disclose, teach, or suggest a resistive layer comprising a metallic component and one or more nitride, carbide, and/or boride derivatives. Applicants claim a resistive layer comprising a metallic component and one or more nitride, carbide, and/or boride, which is not disclosed, taught, or suggested by either Ros or Hyllberg '346 either individually or combined.

As a result of at least the above mentioned, the Applicants respectfully submit that claim 59 is allowable and allowance is respectfully requested.

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

D. Claims 60-67

The Applicants respectfully submit that since claims 60-67 depend on independent claim 59, claims 60-67 contain all limitations of independent claim 59. Since independent claim 59 should be allowed, as argued above, pending dependent claims 60-67 should be allowed as a matter of law for at least this reason. In re Fine, 5 U.S.P.Q. 2d 1596, 1608 (Fed. Cir. 1988).

1. Claim 63

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach or suggest an adhesion layer between said insulating layer and said substrate.

Therefore, the Applicants respectfully submit that claim 63 should be allowed.

2. Claim 64

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach or suggest a heat reflective layer between said resistive layer and said substrate.

Therefore, the Applicants respectfully submit that claim 64 should be allowed.

3. Claim 66

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

In addition to the above mentioned, neither Ros nor Hyllberg '346 disclose, teach or suggest wherein the substrate is an injection mold, a roller, or a platen for semiconductor wafer processing.

The substrate being an injection mold, a roller, or a platen for semiconductor wafer processing is not obvious based on U.S. Patent No. 3,922,386 to Ros, (hereinafter "Ros") in view of U.S. Patent No. 5,616,263 to Hyllberg (hereinafter "Hyllberg '263"). Neither Ros nor Hyllberg '263 disclose, teach, or suggest the substrate being an injection mold, a roller, or a platen for semiconductor wafer processing. Semiconductor wafer processing requires precision equipment. Neither Ros nor Hyllberg '263 suggest a substrate designed for the precision required in semiconductor wafer processing.

Therefore, the Applicants respectfully submit that claim 66 should be allowed.

V. Prior Art Made of Record

The prior art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

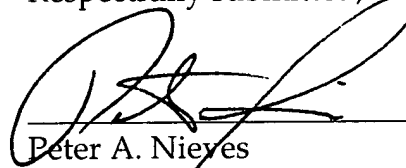
HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, the Applicants respectfully submit that all objections and rejections have been traversed, rendered moot and/or accommodated, and that presently pending claims 1-30 and 51-67 are in condition for allowance. Favorable reconsideration and allowance of the present application and the presently pending claims are hereby courteously requested. If in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (603) 668-1400.

Respectfully submitted,



Peter A. Nieves
Attorney for Applicant
Reg. No. 48,173

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231 on November 28, 2003 at Manchester, New Hampshire.

By: 
Johanne Hrycuna

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567